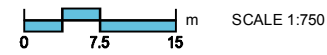
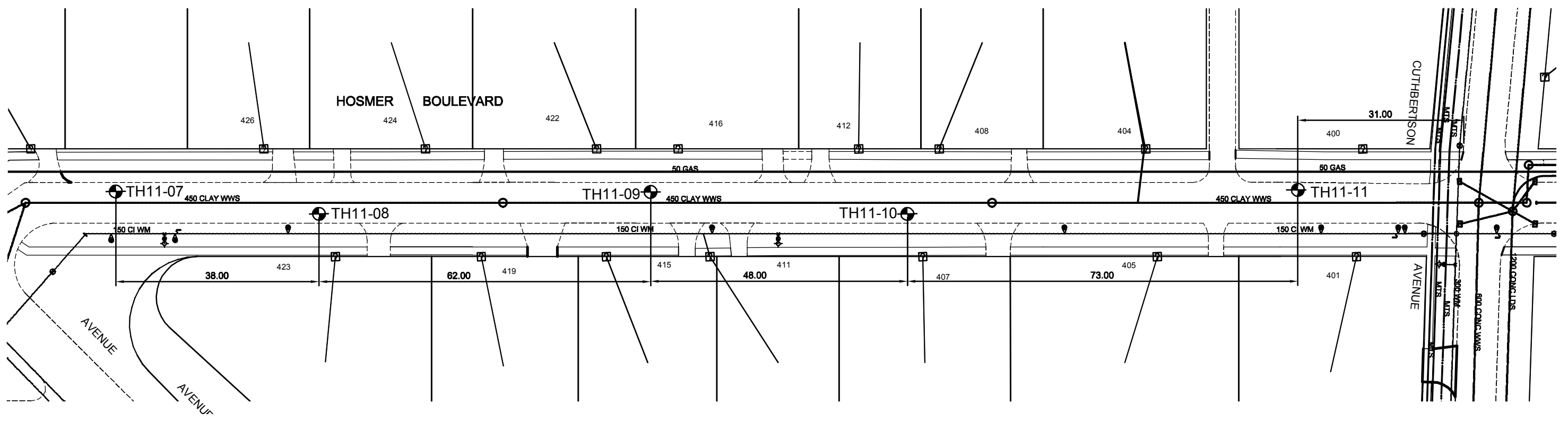
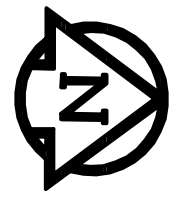


**APPENDIX A
HOSMER BLVD.**

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City of Winnipeg
 2011 Residential Package
 Test Hole Locations
Hosmer Boulevard
Mountbatten Ave to Cuthbertson Ave
Figure - 3

AECOM Canada Ltd.

GENERAL STATEMENT

NORMAL VARIABILITY OF SUBSURFACE CONDITIONS

The scope of the investigation presented herein is limited to an investigation of the subsurface conditions as to suitability for the proposed project. This report has been prepared to aid in the evaluation of the site and to assist the engineer in the design of the facilities. Our description of the project represents our understanding of the significant aspects of the project relevant to the design and construction of earth work, foundations and similar. In the event of any changes in the basic design or location of the structures as outlined in this report or plan, we should be given the opportunity to review the changes and to modify or reaffirm in writing the conclusions and recommendations of this report.

The analysis and recommendations presented in this report are based on the data obtained from the borings and test pit excavations made at the locations indicated on the site plans and from other information discussed herein. This report is based on the assumption that the subsurface conditions everywhere are not significantly different from those disclosed by the borings and excavations. However, variations in soil conditions may exist between the excavations and, also, general groundwater levels and conditions may fluctuate from time to time. The nature and extent of the variations may not become evident until construction. If subsurface conditions differ from those encountered in the exploratory borings and excavations, are observed or encountered during construction, or appear to be present beneath or beyond excavations, we should be advised at once so that we can observe and review these conditions and reconsider our recommendations where necessary.

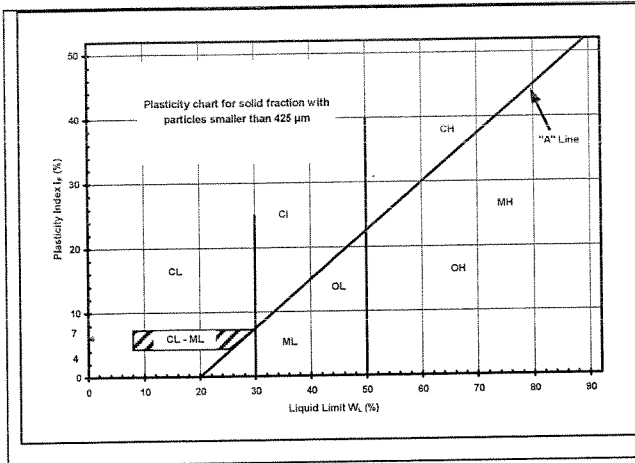
Since it is possible for conditions to vary from those assumed in the analysis and upon which our conclusions and recommendations are based, a contingency fund should be included in the construction budget to allow for the possibility of variations which may result in modification of the design and construction procedures.

In order to observe compliance with the design concepts, specifications or recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated, we recommend that all construction operations dealing with earth work and the foundations be observed by an experienced soils engineer. We can be retained to provide these services for you during construction. In addition, we can be retained to review the plans and specifications that have been prepared to check for substantial conformance with the conclusions and recommendations contained in our report.

EXPLANATION OF FIELD & LABORATORY TEST DATA

Description		UMA Log Symbols	USCS Classification	Laboratory Classification Criteria				
				Fines (%)	Grading	Plasticity	Notes	
COARSE GRAINED SOILS	GRAVELS (More than 50% of coarse fraction of gravel size)	CLEAN GRAVELS (Little or no fines)	Well graded gravels, sandy gravels, with little or no fines		GW	0-5	$C_u > 4$ $1 < C_c < 3$	Dual symbols if 5-12% fines. Dual symbols if above "A" line and $4 < W_p < 7$ $C_u = \frac{D_{60}}{D_{10}}$ $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$
		Poorly graded gravels, sandy gravels, with little or no fines		GP	0-5	Not satisfying GW requirements		
		DIRTY GRAVELS (With some fines)	Silty gravels, silty sandy gravels		GM	> 12	Atterberg limits below "A" line or $W_p < 4$	
			Clayey gravels, clayey sandy gravels		GC	> 12	Atterberg limits above "A" line or $W_p < 7$	
	SANDS (More than 50% of coarse fraction of sand size)	CLEAN SANDS (Little or no fines)	Well graded sands, gravelly sands, with little or no fines		SW	0-5	$C_u > 6$ $1 < C_c < 3$	
			Poorly graded sands, gravelly sands, with little or no fines		SP	0-5	Not satisfying SW requirements	
		DIRTY SANDS (With some fines)	Silty sands, sand-silt mixtures		SM	> 12	Atterberg limits below "A" line or $W_p < 4$	
			Clayey sands, sand-clay mixtures		SC	> 12	Atterberg limits above "A" line or $W_p < 7$	
FINE GRAINED SOILS	SILTS (Below 'A' line negligible organic content)	$W_L < 50$	Inorganic silts, silty or clayey fine sands, with slight plasticity		ML		Classification is Based upon Plasticity Chart	
		$W_L > 50$	Inorganic silts of high plasticity		MH			
	CLAYS (Above 'A' line negligible organic content)	$W_L < 30$	Inorganic clays, silty clays, sandy clays of low plasticity, lean clays		CL			
		$30 < W_L < 50$	Inorganic clays and silty clays of medium plasticity		CI			
		$W_L > 50$	Inorganic clays of high plasticity, fat clays		CH			
	ORGANIC SILTS & CLAYS (Below 'A' line)	$W_L < 50$	Organic silts and organic silty clays of low plasticity		OL			
		$W_L > 50$	Organic clays of high plasticity		OH			
	HIGHLY ORGANIC SOILS		Peat and other highly organic soils		Pt	Von Post Classification Limit		Strong colour or odour, and often fibrous texture
	Asphalt		Till			AECOM		
	Concrete		Bedrock (Undifferentiated)					
	Fill		Bedrock (Limestone)					

When the above classification terms are used in this report or test hole logs, the designated fractions may be visually estimated and not measured.



FRACTION	SEIVE SIZE (mm)		DEFINING RANGES OF PERCENTAGE BY WEIGHT OF MINOR COMPONENTS	
	Passing	Retained	Percent	Identifier
Gravel	Coarse	76	19	35-50 and
	Fine	19	4.75	
Sand	Coarse	4.75	2.00	20-35 "y" or "ey" *
	Medium	2.00	0.425	
	Fine	0.425	0.075	
Silt (non-plastic) or Clay (plastic)	< 0.075 mm		10-20	some
* for example: gravelly, sandy clayey, silty				
Definition of Oversize Material				
COBBLES: 76mm to 300mm diameter				
BOULDERS: >300mm diameter				

LEGEND OF SYMBOLS

Laboratory and field tests are identified as follows:

- q_u - undrained shear strength (kPa) derived from unconfined compression testing.
- T_v - undrained shear strength (kPa) measured using a torvane
- p_p - undrained shear strength (kPa) measured using a pocket penetrometer.
- L_v - undrained shear strength (kPa) measured using a lab vane.
- F_v - undrained shear strength (kPa) measured using a field vane.
- γ - bulk unit weight (kN/m^3).
- SPT - Standard Penetration Test. Recorded as number of blows (N) from a 63.5 kg hammer dropped 0.76 m (free fall) which is required to drive a 51 mm O.D. Raymond type sampler 0.30 m into the soil.
- DPPT - Drive Point Pentrometer Test. Recorded as number of blows from a 63.5 kg hammer dropped 0.76 m (free fall) which is required to drive a 50 mm drive point 0.30 m into the soil.
- w - moisture content (W_L, W_P)

The undrained shear strength (S_u) of a cohesive soil can be related to its consistency as follows:

S_u (kPa)	CONSISTENCY
<12	very soft
12 - 25	soft
25 - 50	medium or firm
50 - 100	stiff
100 - 200	very stiff
200	hard

The resistance (N) of a non-cohesive soil can be related to compactness condition as follows

N - BLOWS/0.30 m	COMPACTNESS
0 - 4	very loose
4 - 10	loose
10 - 30	compact
30 - 50	dense
50	very dense

PROJECT: 2011 Residential Street Renewal	CLIENT: City of Winnipeg	TESTHOLE NO: TH11-07
LOCATION: Hosmer Blvd, Southbound Lane, 252m South of Cuthbertson Ave., 2.2 m East of curb.	PROJECT NO.: 60212233	
CONTRACTOR: Paddock Drilling Ltd.	METHOD: 125 mm SSA with 150 mm Coring	ELEVATION (m):
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB	<input type="checkbox"/> SHELBY TUBE
	<input checked="" type="checkbox"/> SPLIT SPOON	<input type="checkbox"/> BULK
	<input type="checkbox"/> NO RECOVERY	<input type="checkbox"/> CORE

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PENETRATION TESTS		UNDRAINED SHEAR STRENGTH		COMMENTS	DEPTH
					* Becker * ◇ Dynamic Cone ◇ ◆ SPT (Standard Pen Test) ◆ (Blows/300mm) Total Unit Wt (kN/m³)	+ Torvane + X QU X □ Lab Vane □ △ Pocket Pen. △ ● Field Vane ●				
0		ASPHALT (thickness = 110 mm)								
		GRANULAR BASE (<19 mm) - brown - well graded - moist								
		SILT - sandy - light brown - frozen, moist when thawed - low plasticity		G43	●					
		- some clay below 0.9 m		G44	●					
		CLAY - brown - frozen to 1.7 m, moist when thawed - high plasticity		G45	●					
				G46	●					
		- below 1.7 m, firm		G47	●					
				G48	●					
		END OF TEST HOLE AT 2.1 m in clay. NOTES: 1. No sloughing observed. 2. No seepage observed. 3. Test hole backfilled with auger cuttings, sand and asphalt cold patch to surface. 2. Drilled with 150 mm diamond core to 0.11 m, solid stem augers to 2.1 m.								

LOG OF TEST HOLE HUGO STREET, HOSMER BLVD, ACADIA BAY LOGS.GPJ LUMA WINN.GDT 4/29/11



LOGGED BY: Stephen Petsche	COMPLETION DEPTH: 2.10 m
REVIEWED BY: Faris Khalil	COMPLETION DATE: 4/18/11
PROJECT ENGINEER: Faris Khalil	Page 1 of 1

PROJECT: 2011 Residential Street Renewal CLIENT: City of Winnipeg TESTHOLE NO: TH11-08
 LOCATION: Hosmer Blvd, Northbound Lane, 214m South of Cuthbertson Ave., 2.0 m West of curb. PROJECT NO.: 60212233
 CONTRACTOR: Paddock Drilling Ltd. METHOD: 125 mm SSA with 150 mm Coring ELEVATION (m):

SAMPLE TYPE GRAB SHELBY TUBE SPLIT SPOON BULK NO RECOVERY CORE

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PENETRATION TESTS		UNDRAINED SHEAR STRENGTH	COMMENTS	DEPTH
					* Becker * ◇ Dynamic Cone ◇ ◆ SPT (Standard Pen Test) ◆ (Blows/300mm) 0 20 40 60 80 100 Total Unit Wt (kN/m ³) 16 17 18 19 20 21 Plastic MC Liquid 20 40 60 80 100	+ Torvane + X QU X □ Lab Vane □ △ Pocket Pen. △ ● Field Vane ● (kPa) 50 100 150 200			
0		ASPHALT (thickness = 125 mm)							
		CONCRETE (thickness = 95 mm)							
		CLAY - dark brown - soft, moist - high plasticity		G49	●				
		SILT - some sand, some clay - light brown - frozen, moist when thawed - low plasticity		G50	●				
				G51	●			Gradation : Sand = 19.2%, Silt = 69.7%, Clay = 11.1%	
				G52	●				
		CLAY - brown - frozen to 2.0 m, moist, firm when thawed - high plasticity		G53	●				
				G54	●				
				G55	●				
		END OF TEST HOLE AT 2.1 m in clay. NOTES: 1. No sloughing observed. 2. No seepage observed. 3. Test hole backfilled with auger cuttings, sand and asphalt cold patch to surface. 4. Drilled with 150 mm diamond core to 0.22 m, solid stem augers to 2.1 m.							

LOG OF TEST HOLE HUGO STREET, HOSMER BLVD, ACADIA BAY LOGS GP.J LUMA WINN GDT 4/29/11



LOGGED BY: Stephen Petsche COMPLETION DEPTH: 2.10 m
 REVIEWED BY: Faris Khalil COMPLETION DATE: 4/18/11
 PROJECT ENGINEER: Faris Khalil Page 1 of 1

PROJECT: 2011 Residential Street Renewal CLIENT: City of Winnipeg TESTHOLE NO: TH11-09
 LOCATION: Hosmer Blvd, Southbound Lane, 152 m South of Cuthbertson Ave., 2.3 m East of curb. PROJECT NO.: 60212233
 CONTRACTOR: Paddock Drilling Ltd. METHOD: 125 mm SSA with 150 mm Coring ELEVATION (m):

SAMPLE TYPE GRAB SHELBY TUBE SPLIT SPOON BULK NO RECOVERY CORE

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PENETRATION TESTS		UNDRAINED SHEAR STRENGTH		COMMENTS	DEPTH
					* Becker * ◇ Dynamic Cone ◇ ◆ SPT (Standard Pen Test) ◆ (Blows/300mm) 0 20 40 60 80 100 Total Unit Wt (kN/m³) 16 17 18 19 20 21 Plastic MC Liquid 20 40 60 80 100	+ Torvane + X QU X □ Lab Vane □ △ Pocket Pen. △ ● Field Vane ● (kPa)				
0		ASPHALT (thickness = 170 mm)								
		CONCRETE (thickness = 120 mm)								
		SILT - light brown - frozen, moist when thawed - low plasticity		G56	●					
		CLAY - some silt, trace sand, trace gypsum - brown - frozen, moist when thawed - high plasticity		G57	●	—			Gradation: Sand = 4.6%, Silt = 23.7%, Clay = 71.7%	
		SILT - some clay - light brown - frozen, moist when thawed - low plasticity		G58	●					
		SILTY CLAY - brown - frozen, moist when thawed - intermediate plasticity		G59	●					
				G60	●					
		CLAY - brown - frozen to 2.0 m, moist, firm below - high plasticity		G61	●					
		END OF TEST HOLE AT 2.1 m in clay. NOTES: 1. No sloughing observed. 2. No seepage observed. 3. Test hole backfilled with auger cuttings, sand and asphalt cold patch to surface. 4. Drilled with 150 mm diamond core to 0.29 m, solid stem augers to 2.1 m.								

LOG OF TEST HOLE HUGO STREET, HOSMER BLVD, ACADIA BAY LOGS GPJ, UMA WINN GDT, 4/29/11



LOGGED BY: Stephen Petsche COMPLETION DEPTH: 2.10 m
 REVIEWED BY: Faris Khalil COMPLETION DATE: 4/18/11
 PROJECT ENGINEER: Faris Khalil Page 1 of 1

PROJECT: 2011 Residential Street Renewal	CLIENT: City of Winnipeg	TESTHOLE NO: TH11-10
LOCATION: Hosmer Blvd, Northbound Lane, 104 m South of Cuthbertson Ave., 1.7 m West of curb.	PROJECT NO.: 60212233	
CONTRACTOR: Paddock Drilling Ltd.	METHOD: 125 mm SSA with 150 mm Coring	ELEVATION (m):
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PENETRATION TESTS		UNDRAINED SHEAR STRENGTH		COMMENTS	DEPTH
					* Becker * ◇ Dynamic Cone ◇ ◆ SPT (Standard Pen Test) ◆ (Blows/300mm) 0 20 40 60 80 100 Total Unit Wt (kN/m³) 16 17 18 19 20 21 Plastic MC Liquid 20 40 60 80 100		+ Torvane + X QU X □ Lab Vane □ △ Pocket Pen. △ ● Field Vane ● (kPa)			
0		ASPHALT (thickness = 115 mm)								
		CONCRETE (thickness = 135 mm)								
		SILTY CLAY - some sand - dark brown - frozen, moist when thawed - high plasticity		G62	●				Gradation: Sand = 20.2%, Silt = 34.1%, Clay = 45.7%	
		CLAY - trace organics - dark brown - frozen, moist when thawed - high plasticity		G63	●					
		SILTY CLAY - brown - frozen, moist when thawed - high plasticity		G64	●					
		SILT - light brown - frozen to 1.8 m, moist when thawed - low plasticity		G65	●					
		- below 1.8 m, soft		G66	●					
		- some clay below 2.0 m		G67	●					
		END OF TEST HOLE AT 2.1 m in silt. NOTES: 1. No sloughing observed. 2. No seepage observed. 3. Test hole backfilled with auger cuttings, sand and asphalt cold patch to surface. 2. Drilled with 150 mm diamond core to 0.25 m, solid stem augers to 2.1 m.								

LOG OF TEST HOLE HUGO STREET, HOSMER BLVD, ACADIA BAY LOGS GPJ, UMA WINN, GDT, 4/29/11



LOGGED BY: Stephen Petsche	COMPLETION DEPTH: 2.10 m
REVIEWED BY: Faris Khalil	COMPLETION DATE: 4/18/11
PROJECT ENGINEER: Faris Khalil	Page 1 of 1

PROJECT: 2011 Residential Street Renewal CLIENT: City of Winnipeg TESTHOLE NO: TH11-11
 LOCATION: Hosmer Blvd, Southbound Lane, 31 m South of Cuthbertson Ave., 2.0 m E of curb. PROJECT NO.: 60212233
 CONTRACTOR: Paddock Drilling Ltd. METHOD: 125 mm SSA with 150 mm Coring ELEVATION (m):

SAMPLE TYPE GRAB SHELBY TUBE SPLIT SPOON BULK NO RECOVERY CORE

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PENETRATION TESTS		UNDRAINED SHEAR STRENGTH		COMMENTS	DEPTH
					SPT (Standard Pen Test) (Blows/300mm)	Total Unit Wt (kN/m ³)	+ Torvane +	Field Vane		
0		ASPHALT (thickness = 140 mm)								
		CONCRETE (thickness = 100 mm)								
		CLAY - trace sand, trace silt - dark brown - frozen to 1.7 m, moist when thawed - high plasticity								
		- trace gypsum at 1.2 m		G68						
				G69						
				G70						
				G71						
		- below 1.7 m, firm		G72						
				G73						

END OF TEST HOLE AT 2.1 m in clay.
 NOTES:
 1. No sloughing observed.
 2. No seepage observed.
 3. Test hole backfilled with auger cuttings, sand and asphalt cold patch to surface.
 2. Drilled with 150 mm diamond core to 0.24 m, solid stem augers to 2.1 m.

LOG OF TEST HOLE: HUGO STREET, HOSMER BLVD, ACADIA BAY LOGS.GPJ, UMA WINN.GDT, 4/29/11

LOGGED BY: Stephen Petsche COMPLETION DEPTH: 2.10 m
 REVIEWED BY: Faris Khalil COMPLETION DATE: 4/18/11
 PROJECT ENGINEER: Faris Khalil Page 1 of 1





Photograph 1. Hosmer Blvd. – TH11-07



Photograph 2. Hosmer Blvd. – TH11-08



Photograph 3. Hosmer Blvd. – TH11-09



Photograph 4. Hosmer Blvd. – TH11-10



Photograph 5. Hosmer Blvd. – TH11-11

